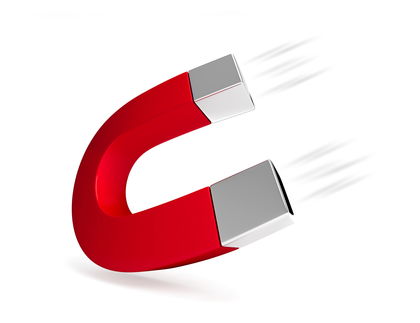
Science in a Bag – Teacher Page

Title of Activity



Grade Level: 3rd

Standards:

* GLE 0307.12.1 Explore how magnets attract objects made of certain metals.
* 0307.12.2 Determine that only certain types of objects are attracted to magnets.
* SPI 0307.12.1 Recognize that magnets can move objects without touching them.
* SPI 0307.12.2 Identify objects that are attracted to magnets

Task Objective: The students will be able to identify objects that are attracted to magnets. They will be able to understand that some objects have magnetism while others do not. The students will also notice magnets can move objects without touching them.

Explanation

The activity should help students to identify what kinds of objects/metals are magnetic. By testing each object located in the bag with a magnet, the students are able to see the different magnetic pull the magnet has on each object. A magnet creates an invisible area of magnetism all around it called a magnetic field. Depending on what type of metal the object is, the magnetic pull may be more or less. This activity should help students to familiarize themselves with the different types of metal the earth contains. The goal of the activity is to spark an interest as to why things have a magnetic field and what makes it have a magnetic pull. Metals that are magnetic include iron, steel, nickel, and cobalt. Nonmagnetic metals are aluminum, lead, brass, gold, silver, platinum, titanium, zinc, and magnesium.

Academic Vocabulary

**Magnet**: An object that is surrounded by a magnetic field and that has the property, either natural or induced, of attracting iron or steel.

**Metal:** any of the elements with a positive electrical charge, typically with a shiny surface and a good conductor of heat.

**Magnetic field:** the lines of force surrounding a permanent magnet or a moving charged particle.

**Push:** to exert force on something

**Pull:** a force drawing someone or something in a particular direction

**Attract:** to cause to draw near

**Repel:** to force back or resist

**Magnetic:** attracted to or acquiring properties of a magnet

**Nonmagnetic:** not capable of being attracted to a magnet

Common Misconceptions

* All metals are attracted to a magnet.
* All silver colored items are attracted to a magnet.
* All magnets are made of iron.
* Larger magnets are stronger than smaller magnets.

Real World Connection

The science behind this activity helps students to understand that the earth itself has its own magnetic field. We use this magnetic field for the compass which helps us to navigate in the right direction when traveling. The magnetic field is also used in the health field for x-rays. This experiment helps to extend their thinking on what ways we do use magnetism in the real world. Magnets can also ruin credit cards because of the magnetic strip located on the back. This data is arranged on the stripe using tiny magnetic particles, so prolonged exposure to an external magnet can throw the information out of place and render the card unreadable.

Connections Across the Curriculum

* The students could measure the distance it took for the magnet to begin to pull the object close. They would use the Math Standard as follows: 3. MD.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.
* The students could write an informative paper on their observations of the experiments. They could write about possible theories and reasoning they have come up with about the magnetic field. The standard is as follows:

3. WS.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.a) Introduce a topic and group related information together; include illustrations when useful to aiding comprehension.b)Develop the topic with facts, definitions, and details.c) Use linking words and phrases (e.g., also, another, and, more, but) to connect ideas within categories of information.d) Provide aconcluding statement or section.

* Students can use knowledge about the magnetic field and apply it to how it affected the way we use a map for directions. They can compare the North Pole and South Pole of earth to the north and south poles of the magnetic fields. They can inquire about how it affects the way we live on earth. Does it affect where we live or how we find direction? 3.2 Interpret maps and globes using common terms including country, region, mountain, hemisphere, latitude, longitude, north pole, south pole, equator, time zones, elevation, approximate distance in miles, isthmus, and strait. 3.3 Use cardinal directions, map scales, legends, titles, longitude and latitude to locate major cities and countries in the world.

References:

**Real World Connection**

* <http://www.scienceclarified.com/everyday/Real-Life-Physics-Vol-3-Biology-Vol-1/Magnetism-Real-life-applications.html>
* <http://www.creditcards.com/credit-card-news/demagnetization-ruin-credit-card-magnetic-stripe-1273.php>

**Standards**

* [www.**tn**.gov/education/**standards**/index.shtml](http://www.tn.gov/education/standards/index.shtml)

**Explanation**

* <http://www.lovemyscience.com/cat_magnetic.html>
* <http://www.scrapmetaljunkie.com/230/the-magnet-test-2>

**Vocabulary**

* <https://amandarussell71.wordpress.com/lessons/>

Science in a Bag – Student Page

Title of Activity



Grade Level: 3rd

Standards :

* GLE 0307.12.1 Explore how magnets attract objects made of certain metals.
* 0307.12.2 Determine that only certain types of objects are attracted to magnets.
* SPI 0307.12.1 Recognize that magnets can move objects without touching them.
* SPI 0307.12.2 Identify objects that are attracted to magnets

Task Objective

The students will be able to identify objects that are attracted to magnets. They will be able to understand that some objects have magnetism while others do not. The students will also notice magnets can move objects without touching them.

Materials Needed

* Magnet
* Paper clip
* Scissors
* Pencil
* Coins
* Cotton ball
* Paper
* Nuts and bolts
* Plastic Spoon
* Rubber Bands
* Wooden Blocks
* Record Sheet

Procedures

1. Take out the vocabulary located in the bag.
2. Do your best to match up the definitions to each word. If there are any that you do not know just leave them and continue on to the experiment.
3. Open the bag and empty all labeled contents onto table.
4. Separate each object.
5. Take the magnet and test each labeled object for magnetism. Record your data as you test each object.
6. Next, walk around the classroom and test random objects for magnetism. Record your data on the record sheet and make sure to label the objects you chose to test.
7. Once you are finished testing objects around the room, go back to the table and see if you can now match all the vocabulary with their definitions.
8. When you have finished, be sure to put all contents back in the bag and put your record sheet in your interactive notebook.

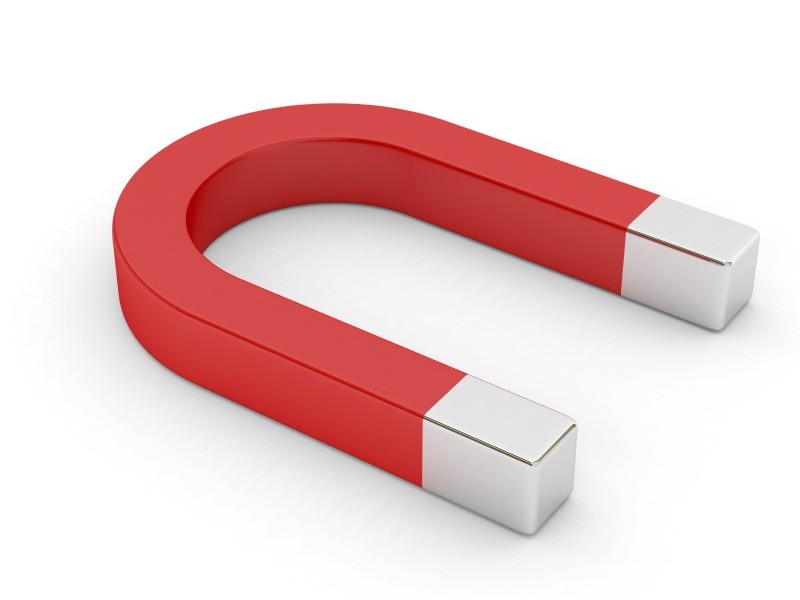
Academic Vocabulary

The students will use card sorts to assess their prior knowledge to the vocabulary of this experiment. A set of cards that are aligned to the content goal of this experiment will be available for students at the beginning of the experiment.

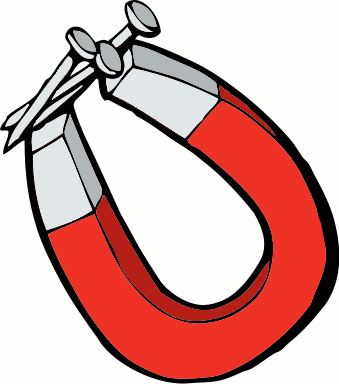
Assessment

Fist to Five will be the choice of assessment so students can indicate the extent of their understanding.

Clean-up: Put all objects back into the bag and return to the teacher. Turn record sheet into the teacher as well.



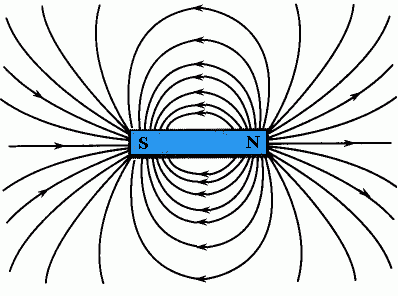
**Magnet**: An object that is surrounded by a magnetic field and that has the property, either natural or induced, of attracting iron or steel.



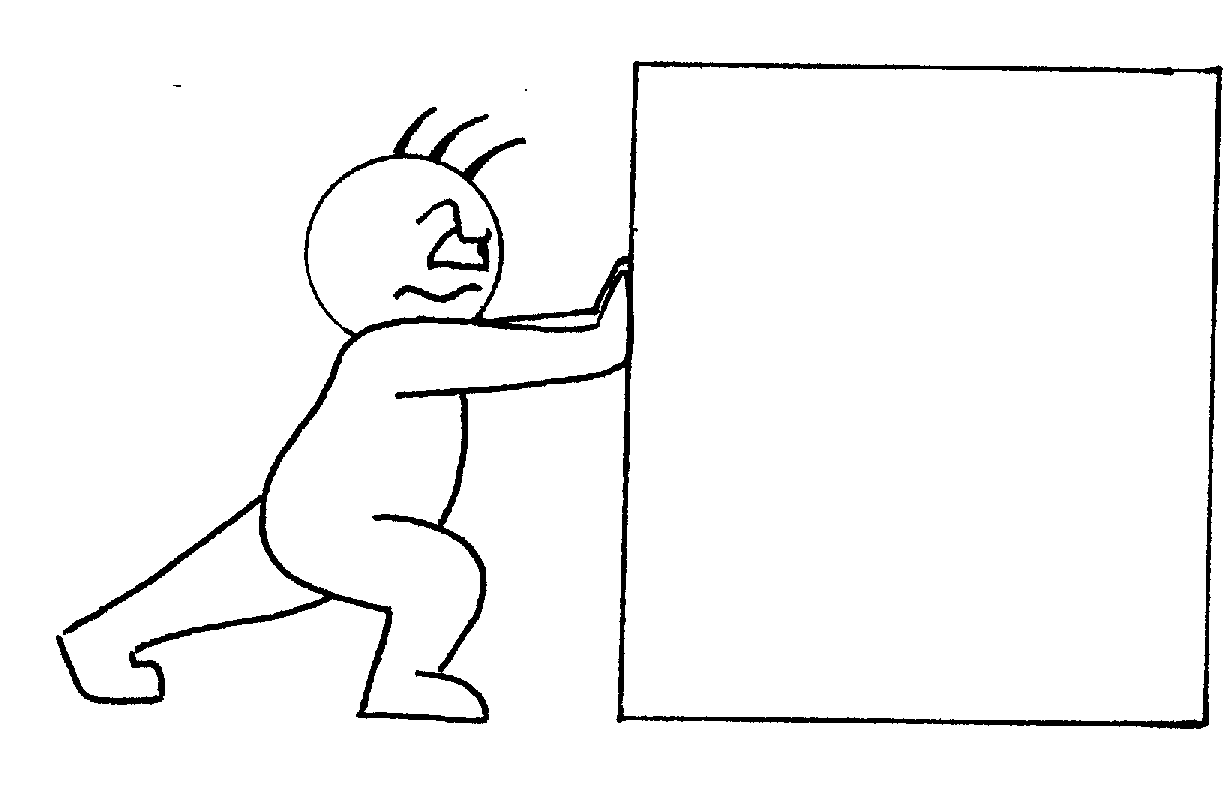
**Magnetic:** attracted to or acquiring properties of a magnet



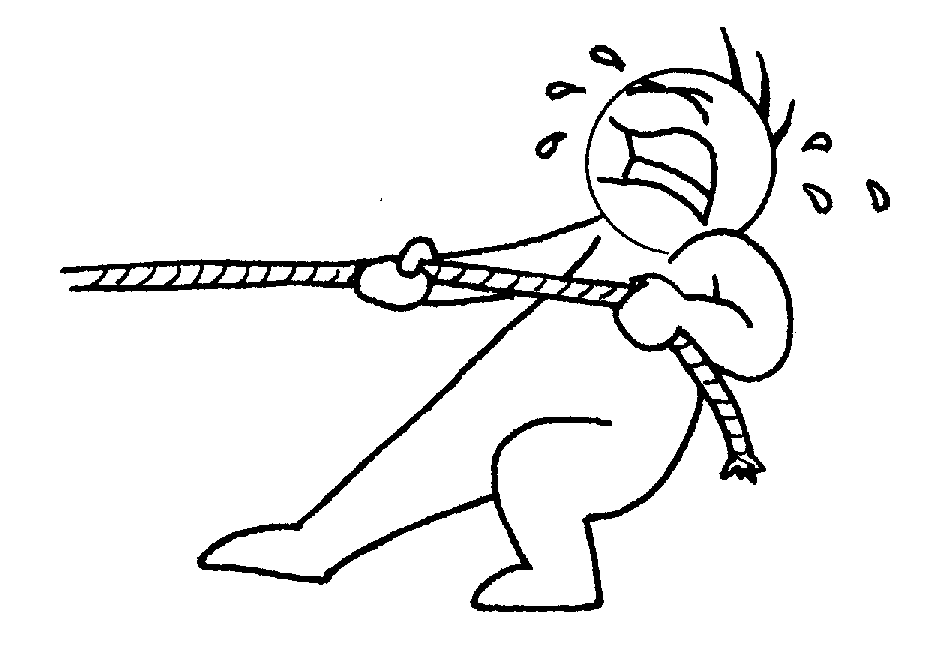
**Metal:** any of the elements with a positive electrical charge, typically with a shiny surface and a good conductor of heat.



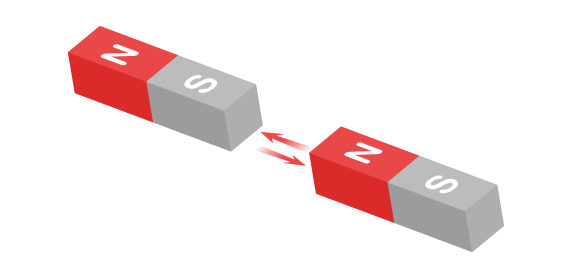
**Magnetic field:** the lines of force surrounding a permanent magnet or a moving charged particle.



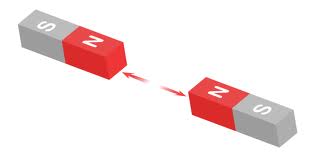
**Push:** to exert force on something



**Pull:** a force drawing someone or something in a particular direction



**Attract:** to cause to draw near



**Repel:** to force back or resist



**Nonmagnetic:** not capable of being attracted to a magnet

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Magnet Classification Chart

|  |  |  |
| --- | --- | --- |
| Magnetic  (stick to magnet) | Nonmagnetic  (do not stick to magnets) | Both  (items that stick to and do not stick to magnets) |
|  |  |  |